Determining The Future Of Naval Aviation: An Institutional Perspective

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Executive Summary

Naval Aviation is increasingly facing a future in which it will have to operate aircraft with diminished margins of capability over potential adversaries or face force structure reductions below the DOD Base Force in order to field a modernized force. Naval aircraft modernization plans have been complicated by a wide range of mission requirements, acquisition failures, and new post Cold War budget constraints.

However complicated these problems are, the root cause of naval aviation's looming modernization crisis is the failure to develop institutional consensus on a rational strategy for the future within the uniformed elements of naval aviation, the Office of the Chief of Naval Operations (OPNAV), and the Department of the Navy (DON). The lack of consensus and cohesion have undercut naval aviation's ability to function in the DOD and Congressional budget battlegrounds. The result is that the OPNAV and the DON have forfeited the ability to set the future agenda of naval aviation.

The subdivision of naval aviation into separate platform based communities is the chief institutional factor that prevents naval aviation from speaking with one voice. Marine Corps aviation presents other institutional problems. The changing institutional environment in OPNAV, the DON and DOD have also contributed to the disarray which places naval aviation's future at risk. The most dramatic changes have been the decline in power and influence of the platform "barons" and the rise of an independent acquisition corps directly under the SECNAV's authority.

The genesis of the F/A-18 E/F program is used to demonstrate the weakness of the present institutional arrangements within OPNAV and the DON. The conclusion discusses why strong warfare area representation is essential to managing the diverse elements of the Navy and for developing and articulating naval modernization strategies. A return of the platform sponsors to DCNO status is recommended.

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THESIS: The nations future defense strategy based upon forward presence, crisis response, and power projection seems to provide an ideal environment for Naval Aviation to continue to flourish. However, the failure to develop institutional consensus within the uniformed elements of naval aviation, the Office of the Chief of Naval Operations and the Department of the Navy have undercut naval aviation's ability articulate a sound strategy for the future, thus
placing the future at risk.

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Operation Desert Storm demonstrated the capabilities U. S. military forces built-up during the 1980's. This was particularly true for airpower. While the day may never come when airpower alone can achieve total victory in a conventional war, it did prove to be the decisive factor in enabling an operational commander to reduce an enemy's capability and to shape the battlefield to ensure victory.

However, for the proponents of naval air power, the results of Desert Storm look less appealing. Although Navy and Marine Corps aviators performed ably and professionally in all assigned missions, the Gulf War pointed to some glaring weaknesses in naval aviation. Rear Admiral R. D. Mixson, Commander Carrier Group Two during Desert Storm, detailed several specific areas in which naval aviation is presently weak and needs improving. These areas include insufficient organic air-to-air refueling capability, lack of precision-guided bunker-busting weapons, failure to provide for media

requirements, and the failure to impact the joint (CINC) deliberative process. (23:38)

While these problems are real and need solutions, they are only part of much larger modernization problems threatening naval aviation's future. Desert Storm demonstrated a much more serious weakness in naval aviation than those which RADM Mixson mentioned: The advanced age and limited capability/survivability of many naval aircraft (F -14A, A-6E) prevented them from playing as useful a role as their more modern Air Force counterparts. Yet even under the most optimistic circumstances, naval aviation will have to keep operating many of these aircraft until the year 2010, and still not have enough aircraft to fill carrier decks, if present projected force structure requirements and aircraft procurement plans remain as forecast. (21:0) Naval aviation is increasingly looking at a future in which it will have to operate aircraft with diminished margins of capability when facing potential adversaries or face severe force structure cuts to field a modernized force.

Present Department of Defense (DOD) Base Force plans recognize the forward-based power projection capabilities carrier air forces provide to the national defense strategy and calls for maintaining a robust aircraft carrier force of 13 (12 active and one training) carriers. (4:76) New replacement carrier construction is scheduled to continue. The problem is that to maintain a 13 carrier and carrier air wing (CVW) force, three active Marine Corps airwings and required numbers of patrol aircraft and fleet helicopters, naval aviation should be buying approximately 200-210 new aircraft per year. (16:9) But, the Future Year Defense Plan (FYDP),reflecting the FY-93 Presidents Budget Request (Table 1), shows significant nearterm deficits in procurement, and while the outyears look better, they are extremely fluid and subject to continuing negative

budget review pressures of the Planning Programming and Budgeting System (PPBS).

In ten years the F/A-18 series aircraft, originally bought as a low-cost inventory filler, will comprise naval aviation's primary TACAIR capability. It will have to replace both earlier model F/A-18s, a portion of retiring F-14As and substitute for deficits in the medium attack or A-6E inventory. The A-6E, originally bought during the 1970's as an updated version of the 1960's vintage A-6A will not begin to be replaced until the AX enters service in the 2003/4 timeframe. Other carrier based aircraft such as the E-2C and EA-6B have no future replacements in view or only have minor upgrade programs planned. The land-based ASW and patrol force appears to have little future with the cancellation of the P-7/ LRACCA program and the perception that the Russian (former Soviet) submarine threat has all but dissipated. The only bright spot, with the exception of a replacement for the aged H-46, appears to be naval helicopter programs based on the AH-1, H-60 and H-53E aircraft series.

Certainly, naval aircraft modernization plans are complicated by several factors, including:

* a wide range of mission requirements, requiring many different types of specialized and expensive aircraft,
* many different types of aircraft are becoming obsolete at roughly the same time,
* procurement failures such as the A-12 and P-7,
* difficulty handingly the new budget realities of the post Cold War era.

However complicated any one of these problems happen to be, they are not the root cause of naval aviation's looming modernization crisis. The

determinate cause of what is ailing naval aviation is institutional. The failure to develop institutional consensus within the uniformed elements of naval aviation, the Office of the Chief of Naval Operations (OPNAV) and the Department of the Navy (DON) on a rational strategy for the future has undercut naval aviation's ability to function on the OSD and Congressional budget battleground (15:107) and allowed various other elements of the national defense establishment to attempt to set the future agenda for naval aviation. What are these elements? Generally they are Congress, the civilian leadership in the DOD and military aircraft and systems manufacturers.

More so than at any time in the last 40 years, these elements are divided and internally fractured on what the future defense strategy of the nation should be, what capabilities should the naval services retain or change, and therefore, what form and strength should naval aviation take. While the need to articulate a naval strategy, and a naval aviation strategy, is more critical today than when the Cold War was on, the Navy seems unable to do so. Further complicating naval aviation's future is the rising influence of the Joint Staff and CINCs vs. the military departments in setting military requirements, the new autonomy of acquisition decision making process, a Planning Programming and Budgeting System (PPBS) overcome by rapidly changing world and national events.

Part of the problem in articulating a strategy for the future of naval aviation is the structure of organization within naval aviation itself. Years ago naval aviation organized itself by subdividing into various "communities" based upon different aircraft models and their missions. Once an officer is associated with a particular community he remains there until achieving a senior grade. This "stovepiping" develops pride and operational expertise in a specific areas

necessary to win in combat. Careers are built,in large part, based on mentor relationships with senior aviators within each community and community loyalty. Transition to another platform and community is the career kiss of death. In comparison with surface, submarine and staff officers in the Navy, there has been little emphasis on post-graduate education at the junior officer level, or other broadening experiences like duty in major Washington, D.C. or CINC staffs. (15:107) Consequently, most naval aviators view their own status and career aspirations with that of their community.

When arriving for duty in the Washington, D.C. arena as generally senior officers, naval aviators do so as advocates for their community - not naval aviation or the Navy. In the very place where the need for broad based team play is essential, naval aviation is fuedalized, with each subdivision pushing its own agenda with little consequence to the larger concerns of naval or naval aviation strategy. VADM R. M. Dunleavy, Assistant Chief of Naval Operations, Air Warfare (OP-05) recognizes the problems caused by community parochialism. In an effort to overcome the "rice bowl" syndrome and tone down the emotionalism caused by successive cancellations of new aircraft programs he has stated that naval aviation needs to come together, boldly face a future of change and speak with one voice. (7:0) This is nothing more than the clear recognition that there is not enough money to fund every communities "wish list" and to succeed in having any future, naval aviation needs to stop sending confusing mixed signals to OSD and Capitol Hill. Naval aviation needs to support what is acceptable to the of rest of the uniformed Navy, and the civilian leadership in the DON and Office of the Secretary of Defense (OSD). Thus the focus of the present strategy for naval aviation future are the politically acceptable (to OSD) F/A-18E/F and AX programs.

But the status quo never changes easily. The F-14 community has not

taken the cancellation of the aircraft that were to guarantee their future, the F-14D and Naval Advanced Tactical Fighter (NATF), lying down. In strongly worded letters to Proceedings during the last year, fighter community proponents bitterly complained that the Navy and DOD leadership was completely out of touch with the requirements of the fleet and that they did not know what they were doing by canceling the F-14D. This was largely based upon the assertion that the F-14D was a much more capable aircraft than the F/A-18 E/F could hope to be. (30:16) There were also complaints that the F-14D cancellation was driven by internal DOD lobbying of the "single-seat mafia" (8:70) or strike-fighter (F/A-18) community to gain OSD, and eventual Navy, endorsement for an improved version of the F/A-18 and simultaneously kill the F-14D and NATF programs. Without passing any judgment on what the F/A-18 community did or didn't do in this case - the methodology is similar to what other community in naval aviation has done for years - promoting their own interest through networks in the Office of the Chief of Naval Operations (OPNAV), Naval Air Systems Command (NEVER), Secretary of the Navy (SECNAV), OSD, contractors and Congressional staffs. Infact, as soon as the F-14D cancellation was announced, F-14D proponents, in and out of uniform, vowed to storm Capitol Hill to overturn the decision. For community advocates this is merely superior staff work through "networking," not "end runs" around established positions by OP-05,the CNO and the SECNAV. Power and influence are diffused among many voices, causing confusion, inconsistency and undercutting the ability of the of any naval leader to articulate a holistic vision of what naval aviation should look like in the future.

Another community within naval aviation presents other difficulties in forming and articulating a rationale strategy for the future: Marine Corps Aviation. The Marines are not so difficult to get along with because they put

platform community loyalty ahead of marine aviation. It is their elevated sense of service loyalty, their unique requirements and their ability to access their own service chief, the Commandant of the Marine Corps, that present naval aviation with difficult force planning and integration problems. While marine aviation is programmed and budgeted with Navy funding, so-called "blue in support of green" through the OP-05, and there are Marines on the OP-05 staff to address and coordinate Marine Corps requirements with those of the Navy, there remains some friction and gaps. A primary source of communication problems originate simply from the location of the Deputy Chief of Staff (DC/S), Aviation of the Marine Corps offices. Despite also being a senior member of the OP-05 staff, DC/S, Aviation offices remain at the Headquarters Marine Corps building instead of being co-located with OPNAV offices in the Pentagon. Informal, day in and day out, contact between the Navy and Marine Corps flag and general officers is infrequent. When frequent contact is made, time is short, due to PPBS milestone deadlines, funding options are scarce, due to other programmatic commitments, and the issues are couched in inflexible "yes or no" terms.

In terms of technological development the Marines are much more interested in emphasizing advanced STOVAL and rotorcraft technologies than the Navy. The Marines are the only U.S. service to employ the Harrier "jump-jet" and want a future replacement. And despite the fact that SECDEF canceled the HV-22 program back in 1989, the program still remains alive largely through the active lobbying of retired Marine Corps loyalists and contractors. The Marines also have different operational priorities than the Navy. The Navy has been more directed toward deep air interdiction, air superiority and ASW missions while the Marines emphasize operations in support of ground schemes of maneuver. Assault support and close air support

(CAS) of ground troops are top priorities.(13:0)

Developing the consensus required for articulating, implementing and managing naval aviation strategy for the future, is not only complicated by the internal divisions in naval aviation. The changing institutional environment of OPNAV, SECNAV and OSD have also contributed to the disarray which places the future of naval aviation at risk. The shifting scope and emphasis of the power and influence exercised both within and between these senior organizations has a critical effect on how robust a future naval aviation will have.

During the last decade, the most dramatic shift in power and influence in the DON and OPNAV has been from the former "barons" or platform sponsors for air, surface and submarine warfare to the programming, budgeting and acquisition staffs of the CNO and SECNAV.

The shift was due to four main factors: organizational changes that would support development of a naval /maritime strategy by CNO ADM Thomas Hayward; the energy and audacity of the Reagan Administration's first SECNAV, John Lehman; the Goldwater-Nichols Defense Reorganization Act of 1986; and the implementation of the Defense Management Review (DMR) "reforms."

Hayward understood that the two most important functions of OPNAV, the programming, or resource allocation process, and the setting of requirements for new systems were dominated by the then Deputy CNOs (DCNOs) for air, surface, and submarine warfare. A CNO could intervene in the programming process but he usually lacked the time and staff to overcome positions and influence that had already been set by the DCNOs and coordinated with the Systems Commands. To exert his own authority Hayward, then CNO ADM James Watkins, substantially strengthened their own programming directorate (then OP-090, now OP-8O) and greatly expanded the

focus of what was then OP-095 from just ASW to coordination of all functional areas of naval warfare. (20:110-112) The present DCNO for Naval Warfare (OP-07) organization is the result.

SECNAV Lehman implemented several changes in the DON and OPNAV to increase his personal influence, provide additional overall policy direction and further overcome the influence of the platform DCNOs within OPNAV. Ignoring the traditional separation of the SECNAV's acquisition authority and the CNO's programming duties he took on a much larger role in controlling the programming process through the establishment of DON Program Strategy Boards. By effectively, utilizing his influence on Capitol Hill, authority over acquisition and continuously threatening programmatic or acquisition related action, Lehman kept the DCNO's off balance and responding to his initiatives, not theirs. (20:116-117) For naval aviation, this meant OP-05 had less and less influence over the direction of aviation modernization strategy and over acquisition related program direction at Naval Air Systems Command.

The Goldwater-Nichols Act of 1986 officially ended the era of the platform "barons by limiting the number of DCNOs OPNAV could have to five. CNO ADM Carlisle Trost appointed his functionally oriented staff (programming, logistics, personnel, naval warfare, and operations) as DCNOs and demoted the platform sponsors to Assistant CNOs (ACNOs). (20:125) Goldwater-Nichols further reduced the influence of the OPNAV platform sponsors by strengthening the SECNAV's acquisition authority over the systems commands and mandating the management of acquisition programs by officers wholly dedicated to the defense acquisition (Material Professionals). The purpose was to curtail acquisition management from the influence OPNAV, and achieve more streamlined and business-like management.

Finally, there is the influence of the DMR. For OPNAV this has meant a complete transfer of all functions supervisory functions related to research, development and acquisition to SECNAV. All major acquisition programs are directly managed through a new Assistant Secretary of the Navy for Research, Development and Acquisition (ASN, RD&A) through either a Program Executive Officer (PEO) or Direct Reporting Program Manager (DRPM).

The result of all these institutional changes has further eroded the ability of any one bureaucracy in OPNAV or the DON to set the agenda for naval aviation or any other warfare area. OP-05, as an ACNO, still has the power to sign Tentative Operational Requirements (TOR) documents but, only with the concurrence of OP-07. OP-05 still has programming authority over naval aviation but it is increasingly overshadowed by a more powerful OP-80. The focus of ASN (RD & A) is the politically sensitive area of executing approved acquisition programs. But it is not organized or staffed to develop requirements or engage in the resource allocation process of programming. (32:0)

The CNO is constrained in setting an agenda for naval aviation also. He must balance the advice he receives from all his DCNOs and ACNOs in many different warfare areas, as well as coordinating with the the Joint Staff, the warfighting CINCs, SECNAV, and the ASNs for financial and acquisition management. Has back-to-back submariner CNOs hurt naval aviation? There is no direct evidence that it has. No one can blame any of the major program cancellations on any of the CNOs. The NATF cancellation originated in OP-05 in an effort to focus declining resources on the A-12 and reduce R &D overhead costs. The A-12 and P-7 cancellations were acquisition related, caused by poor contractor performance and, in the case of the A-12, poor monitoring by the acquisition system. The F-14D cancellations, first the new aircraft and then the remanufactured version, were OSD decisions, based primarily on

affordability. (32:0) How important is it to naval aviation for an aviator to be one of the next two CNOs? VADM Dunleavy believes it is critical. But his reasoning is based more on the motivational needs of officers in all major warfare areas to have the opportunity to compete for the top job (7:0) rather than on the need to have an aviator CNO focus on the needs of naval aviation.

Perhaps a better measure of the effect back-to-back submariner CNOs have had on naval aviation is the percentage of aircraft procurement (APN) funding relative to total DON spending. It stands to reason that if the Navy wants a viable aviation force to support the SECDEF/CJCS Base Force, it would devote the appropriate level of resources. But this is not being done. The percentage of APN-1 (new aircraft) funding to total DON funding has been in a downward slide since fiscal year 1986 (FY-86), reaching an historical low in of 4.2 percent in FY-91. This compares to historic APN-1 funding levels of approximately 7.2 percent of total DON funding. (22:0) Yet despite all the concern about the future of naval aviation, APN-1 funding remains low; in FY-93 only amounting to 4.6 percent of total DON funding. (5:0) Naval aviation is not only feeling the effect the post Cold War reduction in overall DON spending, but a reduction in its percentage of DON funding, as well. (22:0) Yet analysts in OP-80 insist it is unrealistic for naval aviation to receive any additional funding in future budget projections. This possibly suggests a policy of "benign neglect" with respect to naval aviation on the part of the Navy hierarchy, aimed not specifically aimed at ruining naval aviation, but toward preserving other "rice bowls" in the service.

The diffusion of power and lack of consensus on what constitutes a realistic future for naval aviation within the DON and OPNAV has allowed the OSD staff to move in and set the agenda. In late 1990, as the final plans were

being reviewed for DOD's FY-92/93 budget, analysts in OSD's office of Program Analysis and & Evaluation (PA & E) felt that internal Navy politics had lead to such a morass of confusion, that the service could no longer be trusted to realistically program a future for naval aviation. (9:0) The Navy was busy trying to save the the A-12 program, continue procurement funding for the F/A-18 C/D, the remanufactured version of the F-14D and restart new F-14D production in exchange for cancellation of the NATF which was viewed as unaffordable.

For many years, critics of naval aviation had urged the Navy to reduce the number of different types of aircraft it was buying at relatively uneconomic production rates to achieve less costly and more efficient production of a single, multi-mission, model. The Navy had never recommended this approach because it ran counter to the institutional requirements of the three (four counting the Marines) separate TACAIR communities in naval aviation. But for the program analysts and budgeteers in OSD, the end of the Cold War provided the opportunity to force the Navy to jettison the requirement to buy expensive, single purpose, aircraft and rely on a less expensive (and possibly less capable) multi-mission that could procured in large numbers. McDonnell Douglas had proposed that it could build an larger, upgraded version of the F/A-18 that could be developed (for 3.3 billion dollars) and ready for production by FY-96. (1:0) Thus the F/A-18 E/F program was born - not only as an upgrade for the growth limited F/A-18 C/D aircraft, but as a replacements for the more expensive F-14D and its designated replacement, the NATF.

The initiation of the F/A-18 E/F and the cancellation of the A-12 programs not only demonstrated the institutional weakness of OPNAV and the DON; it also demonstrated the increased willingness of OSD to step in, ignore the advise of a service chief and secretary, and perform radical surgery on an

service's plan for the future. OSD had not just slowed or canceled a service program, or rebuted a service proposal.

The civilians in OSD had completely rearranged the Navy's TACAIR modernization strategy. Could the same thing happen to the Air Force or the Army? Possibly, but not probably. Only the DON, and Navy inparticular, has so many mission areas to concern itself with. (32:0) While the Army can focus its attention on the nuances of land warfare and the Air Force can do the same with air delivered tactical and strategic warfare, naval warfare requires expertise in,

land, air, ocean surface, subsurface and strategic warfare areas. Naval warfare also requires the integration of these warfare areas. Air warfare platforms performing ASW and surface warfare vessels performing strategic strikes with TOMAHAWK cruise missile are examples. Such a broad span of warfare areas for any one organization inevitably leads to competition between the proponents of these warfare areas.

The competition can be constructive or destructive depending upon how

the organization is structured, and how power and influence is systematized to achieve the goals of the organization. The present organization and focus of naval aviation, OPNAV and the DON is not conducive to setting and achieving strategic goals. The functionally organized DCNO staffs in OPNAV are not capable of interacting with the fleet and coordinating every complex program in Navy. ASN (RD &A) and the systems commands are organized to provide the managerial and technical expertise to execute acquisition programs, not choose between requirements. The former platform "barons" no longer have the clout necessary to plan, organize, lead and control - manage - a portion of the Navy with the concurrence of the CNO and SECNAV. Who is setting the strategy for the future of naval aviation? Everybody - that's the problem. (32:0)

The challenge for the senior uniformed leadership of naval aviation is to

find ways of developing the consensus within the present organization of OPNAV and the DON to develop and support a realistic strategy for naval aviation's future. The Naval Aviation Liaison Group (NALG) is an adhoc group that is presently provides a forum for the discussion issues facing naval aviation is a step in the right direction. More importantly, naval aviation needs to take steps to reduce the influence of community advocacy within OPNAV, Naval Air Systems Command and the acquisition program offices. Don't allow program managers to manage aircraft programs vital to the communities they are associated with. The uniformed leadership must also demonstrate the willingness to live within constrained funding levels and constructively manage acquisition programs. This means no longer endorsing high cost and high risk technology developments, achieving greater cooperation with the Air Force (as with the AX program), and keeping programs on schedule and on cost.

Finally, OPNAV should review its organizational structure. The emphasis on functional staffs may be fine for the Air Force or for the Army, but the Navy is too complex. (32:0) Every major warfare area needs someone who has the power and influence, accountability and authority to set an holistic agenda for the future. A return of the platform sponsors to DCNO status would partially achieve this, without diluting the authority and responsibility of the CNO and SECNAV.

TABLE 1
DEPARTMENT OF THE NAVY
AIRCRAFT PROCUREMENT, NAVY
SIX-YEAR PLAN

	QUANTITY					
AIRCRAFT	FY 1992	FY 1993	FY 1994	FY 1995	FY 1996	FY 1997
EA-6B*	—	3	9	9	12	12
AV-8B	6	—	—	—	—	—
F/A-18	48	48	39	45	60	84
CH/MH-53E	16	20	20	—	—	—
AH-1W	14	12	12	12	12	12
SH-60B	13	12	12	12	12	12
SH-60F	12	12	12	12	12	12
E-2C	6	—	—	—	—	—
T-45TS	12	12	36	48	48	48
HH-60H	—	7	8	9	—	—
TOTAL AIRCRAFT	127	126	148	147	156	180

* REMANUFACTURED AIRCRAFT ONLY

BIBLIOGRAPHY

1. Boecker, D.V., RADM. Interview on March 25,1992 by LCDR W. B. Stedman.

2. Bond, David. "Industry, Senators Back Naval ATF Strike Fighter." Aviation Week & Space Technology (AW& ST) May 20, 1991.

3. Bond, David. "Navy Weighs Tomahawk." A W & ST January 6, 1992.

4. Cheney, Dick. Annual Report to the President and the Congress. February, 1992.

5. Department of the Navy. Amended FY-93 Budget.. January, 1992.

6. Dunleavy, R. M., VADM. "Naval Aviation's Way Ahead." Proceedings September, 1991.

7. Dunleavy, R. M., VADM. Interview on March 24, 1992 by LCDR W. B. Stedman.

8. Dunleavy, R. M., VADM. "Naval Aviation Decisions: Myths vs. Facts." Proceedings February, 1992.

9. Durham, J. M., LtCoL. CV TACAIR 2010: CARRIER AVIATION FACING FISCAL REALITY. Naval War College. June, 1991.

10. Durham, J. M., LtCoL. Interview on March 19,1992 by LCDR W. B. Stedman.

11. Friedman, Norman. "The Air Campaign." Proceedings April, 1991.

12. Fulgram, D. A. "USAF Chief McPeak Sees A-X as Priority." AW&ST February 10,1992.

13. Gallus, Dennis. Interview on March 16, 1992 by LCDR W. B. Stedman.

14. Gilmartin, P. A. "Defense Planners Refocus R & D" AW& ST March 16, 1992.

15. Gray, W. P., CAPT. "Tell the Story of Naval Aviation in the War." Proceedings July, 1991.

16. "Gulf Lesson: Bolster Carrier Aviation." Editorial. AW &ST April 22, 1991.

17. Holzer, Robert. "Navy Misses on Hornet Estimates." Defense News March 23,1992.

18. Holzer, R. & Leopold, G. "Critics Rap Focus of DOD Tech Strategy." Defense News March 16,1992.

19. Holzer, R. "Navy Begins Effort for new Jump Jet." Defense News March 16, 1992.

20. Hone, T. C. Power and Change - The Administrative History of the Chief of Naval Operations 1946-1986. Naval Historical Center. 1989.

21. Honecker, Mark. Interview on March 19, 1992 by LCDR W. B. Stedman.

22. Krietzer, Larry. Interview on March 26,1992 by LCDR W. B. Stedman.

23. Mixson, R. D., RADM. "Where We Must Do Better." Proceedings August, 1991.

24. Morrocco, J. D. "Naval Aviation Spared Budget Cuts, But AX Program Funding Halved." AW&ST February 3,1992.

25. Morrocco, J. D. "British Aerospace Teams On ASTOVL and Tiger." AW&ST February 24, 1992.

26. Morrocco, J. D. "Dangers Cited in Implementating New Pentagon Acquisition Strategy." AW& ST March 9, 1992.

27. Muir, D. J., CDR. "A View from the Black Hole." Proceedings October, 1991.

28. Myers, C. E. "Time to Fold `em." Proceedings July, 1991.

29. Nelson, C. R., Maj. "Keeping the Edge - Understanding the Importance of Acquisition." Program Manager Jan-Feb, 1992.

30. Unterreiner, R. J., LCDR. Untitled Letter. Proceedings June, 1991.

31. Wills, D. A., LtGen. "Break Some Rice Bowls." Proceedings November, 1991.

32. Zumwalt, Marvin. Interview on March 11, 1992 by LCDR W. B. Stedman.